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BIOLOGICAL BULLETIN

I. TRUSTEES

AUGUST, 1910

EX OFFICIO

F. R. LILLIE, *Director*, University of Chicago.

GILMAN A. DREW, *Assistant Director*, University of Maine.

D. BLAKELY HOAR, *Treasurer*, 161 Devonshire Street, Boston, Mass.

THOS. H. MONTGOMERY, JR., *Clerk of the Corporation*, University of Pennsylvania.

TO SERVE UNTIL 1914

E. G. CONKLIN..... Princeton University.

ROSS G. HARRISON..... Yale University.

CAMILLUS G. KIDDER..... 27 William Street, New York City.

M. M. METCALF..... Oberlin College, Oberlin, Ohio.

WILLIAM PATTEN..... Dartmouth College, Hanover, New Hampshire.

CORNELIA M. CLAPP..... Mount Holyoke College, South Hadley, Mass.

JACOB REIGHARD..... University of Michigan, Ann Arbor, Mich.

W. B. SCOTT..... Princeton University.

TO SERVE UNTIL 1913

NATHANIEL L. BRITTON.. 2965 Decatur Avenue, Bronx, New York City.

S. F. CLARKE..... Williams College, Williamstown, Mass.

CHARLES COOLIDGE..... Ames Building, Boston, Mass.

C. R. CRANE..... 2559 Michigan Boulevard, Chicago, Ill.,
President of the Board.

ALFRED G. MAYER..... Carnegie Institution, Washington, D. C.

T. H. MORGAN..... Columbia University.

ERWIN F. SMITH..... United States Department of Agriculture,
Washington, D. C.

E. B. WILSON..... Columbia University.

TO SERVE UNTIL 1912

- M. J. GREENMAN.....Wistar Institute of Anatomy and Biology,
Philadelphia.
C. W. HARGITT.....Syracuse University.
C. A. HERTER¹.....University and Bellevue Medical School,
New York City.
H. S. JENNINGS.....Johns Hopkins University.
GEORGE LEFEVRE.....University of Missouri.
D. P. PENHALLOW¹.....McGill University, Montreal, Canada.
A. P. MATHEWS.....University of Chicago.
G. H. PARKER.....Harvard University.

TO SERVE UNTIL 1911

- H. C. BUMPUS.....University of Wisconsin, Madison, Wis.
W. A. LOCY.....Northwestern University, Evanston, Ill.
JACQUES LOEB.....Rockefeller Institute for Medical Research,
New York City.
F. P. MALL.....Johns Hopkins University.
GEORGE T. MOORE.....Washington University, St. Louis.
L. L. NUNN.....Telluride, Colo.
JOHN C. PHILLIPS.....299 Berkeley Street, Boston, Mass.
C. O. WHITMAN¹.....University of Chicago.

¹ Deceased.

II. ACT OF INCORPORATION

No. 3170.

COMMONWEALTH OF MASSACHUSETTS

Be It Known, That whereas Alpheus Hyatt, William Sanford Stevens, William T. Sedgwick, Edward G. Gardiner, Susan Minns, Charles Sedgwick Minot, Samuel Wells, William G. Farlow, Anna D. Phillips and B. H. Van Vleck have associated themselves with the intention of forming a Corporation under the name of the Marine Biological Laboratory, for the purpose of establishing and maintaining a laboratory or station for scientific study and investigation, and a school for instruction in biology and natural history, and have complied with the provisions of the statutes of this Commonwealth in such case made and provided, as appears from the certificate of the President, Treasurer, and Trustees of said Corporation, duly approved by the Commissioner of Corporations, and recorded in this office;

Now, therefore, I, HENRY B. PIERCE, Secretary of the Commonwealth of Massachusetts, *do hereby certify* that said A. Hyatt, W. S. Stevens, W. T. Sedgwick, E. G. Gardiner, S. Minns, C. S. Minot, S. Wells, W. G. Farlow, A. D. Phillips, and B. H. Van Vleck, their associates and successors, are legally organized and established as, and are hereby made, an existing Corporation, under the name of the MARINE BIOLOGICAL LABORATORY, with the powers, rights, and privileges, and subject to the limitations, duties, and restrictions, which by law appertain thereto.

Witness my official signature hereunto subscribed, and the seal of the Commonwealth of Massachusetts hereunto affixed, this twentieth day of March, in the year of our Lord ONE THOUSAND, EIGHT HUNDRED AND EIGHTY-EIGHT.

HENRY B. PIERCE,
Secretary of the Commonwealth.

[SEAL.]

III. BY-LAWS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

I. The annual meeting of the members shall be held on the second Tuesday in August, at the Laboratory, in Woods Hole, Mass., at 12 o'clock noon, in each year, and at such meeting the members shall choose by ballot a Treasurer and a Clerk, who shall be, *ex officio*, members of the Board of Trustees, and Trustees as hereinafter provided. At the annual meeting to be held in 1897, not more than twenty-four Trustees shall be chosen, who shall be divided into four classes, to serve one, two, three, and four years, respectively, and thereafter not more than eight Trustees shall be chosen annually for the term of four years. These officers shall hold their respective offices until others are chosen and qualified in their stead. The Director and Assistant Director, who shall be chosen by the Trustees, shall also be Trustees, *ex officio*.

II. Special meetings of the members may be called by the Trustees, to be held in Boston or in Woods Hole at such time and place as may be designated.

III. The Clerk shall give notice of meetings of the members by publication in some daily newspaper published in Boston at least fifteen days before such meeting, and in case of a special meeting the notice shall state the purpose for which it is called.

IV. Twenty-five members shall constitute a quorum at any meeting.

V. The Trustees shall have the control and management of the affairs of the Corporation; they shall present a report of its condition at every annual meeting; they shall elect one of their number President and may choose such other officers and agents as they may think best; they may fix the compensation and define the duties of all the officers and agents; and may remove them, or any of them, except those chosen by the members, at any time; they may fill vacancies occurring in any manner in their own number or in any of the offices. They shall from time to time elect members to the Corporation upon such terms and conditions as they may think best.

VI. Meetings of the Trustees shall be called by the President, or by any two Trustees, and the Secretary shall give notice thereof by

written or printed notice sent to each Trustee by mail, postpaid. Seven Trustees shall constitute a quorum for the transaction of business. The Board of Trustees shall have power to choose an Executive Committee from their own number, and to delegate to such Committee such of their own powers as they may deem expedient.

VII. The President shall annually appoint two Trustees, who shall constitute a committee on finance, to examine from time to time the books and accounts of the Treasurer, and to audit his accounts at the close of the year. No investments of the funds of the Corporation shall be made by the Treasurer except approved by the finance committee in writing.

VIII. The consent of every Trustee shall be necessary to a dissolution of the Marine Biological Laboratory. In case of dissolution, the property shall be given to the Boston Society of Natural History, or some similar public institution, on such terms as may then be agreed upon.

IX. These By-Laws may be altered at any meeting of the Trustees, provided that the notice of such meeting shall state that an alteration of the By-Laws will be acted upon.

X. Any member in good standing may vote at any meeting, either in person or by proxy duly executed.

IV. TREASURER'S REPORT

FOR THE YEAR ENDING DECEMBER 31, 1910

INCOME

| | | |
|-----------------------------------|----|-------------|
| Annual dues..... | \$ | 606.00 |
| Donations (Charles R. Crane)..... | | 8,500.00 |
| Miscellaneous: | | |
| Interest on deposit..... | \$ | 38.89 |
| Rent of microscopes..... | | 14.00 |
| Bath house..... | | 52.40 |
| Div. on 35 shs. Woods Hole | | |
| Yacht Club..... | | 350.00 |
| Mosquito survey..... | | 400.00 |
| Check not used..... | | .82 |
| Supply department..... | | 9,300.58 |
| Mess (net)..... | | 551.97 |
| Tuitions | | 4,150.00 |
| | | <hr/> |
| | | \$23,964.66 |

EXPENSES

| | | |
|---------------------------------------|----|----------|
| Administration | \$ | 900.00 |
| Advertising | | 99.31 |
| Biological Bulletin (net)..... | | 512.70 |
| Boats and launch..... | | 1,502.77 |
| Botany | | 10.05 |
| Chemicals, chemist supplies, etc..... | | 783.23 |
| Fish trap..... | | 88.35 |
| Instructors' salaries..... | | 3,180.00 |
| Insurance | | 284.35 |
| Interest | | 150.00 |
| Labor | | 3,872.52 |
| Mosquito survey..... | | 50.00 |

| | | |
|---------------------------------------|----------|--------------------|
| Periodicals and library supplies..... | 789.60 | |
| Postage | 89.06 | |
| Repairs | 1,377.09 | |
| Sundries | 1,900.20 | |
| Supply department..... | 6,958.25 | \$22,547.48 |
| Surplus | | <u>\$ 1,417.18</u> |

ITEMIZED LIST OF SUNDRY EXPENSES FOR THE YEAR 1910

| | |
|--|----------|
| Announcements and expense mailing..... | \$110.80 |
| Ash cans..... | 12.00 |
| Care of cemetery lot..... | 2.00 |
| Carting ashes..... | 33.95 |
| Covering for ice | 8.66 |
| Dr. Drew's office expenses..... | 225.78 |
| Dr. Lillie's office expenses..... | 104.00 |
| Exchange on checks..... | 31.70 |
| Express | 47.27 |
| Freight and hauling..... | 6.80 |
| Gas machine expense..... | 55.12 |
| Howes' bill..... | 36.64 |
| Hubbard, J. G., services..... | 60.00 |
| Instruments, laboratory supplies..... | 178.40 |
| Laundry | 21.36 |
| Lecture expense..... | 22.30 |
| New York Calcium Light Company..... | 7.38 |
| Notary fees..... | 3.00 |
| Petty cash at Woods Hole..... | 63.62 |
| Premium on bond..... | 7.50 |
| Rent of microscopes..... | 30.00 |
| Rent of typewriter..... | 9.00 |
| Spring water..... | 10.50 |
| Stationery, office supplies..... | 57.50 |
| Steel hand cart..... | 10.00 |
| Sundry supplies..... | 37.57 |
| Teaming | 2.20 |
| Telephone | 31.89 |
| Travelling expenses..... | 39.50 |

| | | |
|--|--------|------------|
| Treasurer's office, clerical services..... | 520.00 | |
| Trustees' dinner..... | 16.00 | |
| Veeder's expenses..... | 24.76 | |
| Water | 65.00 | |
| Wooden cases | 8.00 | |
| | | <hr/> |
| | | \$1,900.20 |

MARINE BIOLOGICAL LABORATORY INVESTMENTS

JANUARY 1, 1911

RESERVE FUND

| | | |
|---|-----------------|------------|
| Amount of fund December 1, 1899..... | \$4,553.14 | |
| Received from life memberships..... | 600.00 | |
| Income to January 1, 1911..... | 2,090.15 | |
| Gain from sale of securities..... | 372.20 | |
| | <u>7,615.49</u> | |
| Paid for current expenses of Laboratory..... | 6,000.00 | \$1,615.49 |
| Reserve fund now consists of the following: | | |
| \$3000 Am. Tel. & Tel. Co. 4s cost..... | \$2,921.25 | |
| 6 shs. Am. Smelting & Refining Co. Pfd. cost | 732.00 | |
| 5 shs. General Electric Co. cost..... | 756.25 | |
| Cash | 205.99 | |
| | <u>4,615.49</u> | |
| The above stocks and bonds are held as collateral | | |
| for loan of | 3,000.00 | \$1,615.49 |

LIBRARY FUND

| | | |
|---|-----------|------------|
| Amount of fund December 1, 1899..... | \$ 866.15 | |
| Income to January 1, 1911..... | 701.47 | |
| Gain from sale of securities..... | 74.88 | |
| Sale of rights | .81 | \$1,643.31 |
| Library fund now consists of the following: | | |
| 3 shs. Am. Tel. & Tel. Co. cost..... | \$ 383.25 | |
| 4/5 of \$1000 Am. Tel. & Tel. Co. 4s cost.... | 779.00 | |
| 1 sh. Am. Smelting & Refining Co. Pfd. cost | 122.00 | |
| 2 shs. General Electric Co. cost..... | 302.50 | |
| Cash | 56.56 | \$1,643.31 |

LUCRETIA CROCKER FUND

| | | |
|---|------------|------------|
| Amount of fund December 1, 1899..... | \$2,500.00 | |
| Income after paying students' fees..... | 522.41 | |
| Sale of rights..... | 1.90 | \$3,024.31 |

Lucretia Crocker Fund now consists of the following:

| | | |
|---|------------|------------|
| 18 shs. Vermont & Mass. R. R. Co. cost..... | \$2,416.50 | |
| 1 sh. West End St. Ry. Co. cost..... | 83.00 | |
| 1 sh. Am. Tel. & Tel. Co. cost..... | 127.75 | |
| 1/5 of \$1000 Am. Tel. & Tel. Co. 4s cost.... | 194.75 | |
| 1 sh. General Electric Co. cost..... | 151.25 | |
| Cash | 51.06 | \$3,024.31 |

V. THE DIRECTOR'S REPORT

TO THE TRUSTEES OF THE MARINE BIOLOGICAL LABORATORY:

Gentlemen: I have the honor to submit herewith a report of the twenty-third session of the Marine Biological Laboratory for the year 1910, and some recommendations for future development.

We record with sorrow the loss by death during the year of three members of the board of trustees: Dr. C. A. Herter, Professor D. P. Penhallow and Professor C. O. Whitman. It is fitting that due expression of the sense of our loss should be given in the form of resolutions to be spread upon the minutes of the board and sent to the families of our lamented colleagues. The death of Professor Whitman was sudden and unexpected. He was taken with pneumonia on November 30 and died on December 6. Memorial services in his honor were held at the University of Chicago on December 8, and his body was laid in the laboratory lot in the Episcopal Cemetery at Woods Hole on December 10 in the presence of a small gathering of his former associates and friends, who alone were able to attend.

Professor Whitman's death may be said to mark the close of the first period of development of the Marine Biological Laboratory. As director for the first twenty-one years of the existence of the Laboratory, more than any other person he gave the Laboratory its status and its ideals. In a very fitting way, therefore, we may say that the Laboratory is a monument to his memory. But it is desirable and due that some permanent memorial should mark his last resting place near the institution that he loved so well, and it is recommended that a committee be appointed to take this matter in charge.

The staff of instruction in 1910 comprised 29 members, representing eighteen institutions. Acknowledgment should again be made to the members of the staff of investigation who rendered their services freely.

The attendance of workers at the laboratory comprised 62 investigators and 64 students—a total of 126 as compared with 66 investigators and 63 students, total, 129, in 1909, and 52 investigators, 48 students, total 100, in 1908. There was a gratifying increase in the number of subscribing institutions, from 19 in 1909 to 24 in 1910. One of the subscribing institutions of 1909 dropped out this year. The new subscribing institutions were Dartmouth College, Massachusetts Agricultural College, The Rockefeller Institute for Medical Research, The University of Illinois and the Washington University Alumni Association. The membership of the corporation was also somewhat increased. The receipts of the supply department increased from \$8,549.55 in 1909, to \$9,300.58, in 1910.

No definite progress was made in the plan for a permanent building during the year, except that steps have been taken to secure the possession of more land that is necessary for the protection of our present holdings. Success has been attained in this direction and I think we may say that we are distinctly nearer the realization of the permanent building, not only in point of time but in preparedness. This raises definitely two questions: first, as concerns the nature and use of the building, and second, concerning administration affairs of the laboratory.

As regards the building, I believe that the committee that was appointed December 30, 1909, was fully agreed that the new building should provide for the library and for a certain number of research rooms. This committee has not formally met and I do not present this as an official report from the committee. But on the assumption that provision would be made for research rooms on a more adequate scale and with better equipment than the present quarters, I think that we should begin to ascertain the attitude of certain universities and research institutions with reference to the maintenance of quarters for investigation to be available throughout the year. Such an inquiry may seem premature; but when we consider that the character of the building to be erected must depend to a certain extent upon the financial support of institutions for its maintenance, I think it will be admitted that we can not move too soon in the direction of receiving assurances.

The second question concerns administration. As matters now stand the burden of administering the affairs of the laboratory falls rather heavily on men who already have a full assignment of work in their own universities. There is no question but that the work of the laboratory could be made more effective in all respects if we had an administrative officer who devoted his entire time to the affairs of the laboratory; it is also questionable whether the laboratory can continuously retain the services of men under present conditions, when their work is given at the expense of effectiveness in their university work and their research. It is therefore recommended, that, as soon as may be, the office of assistant director be made a resident position for the entire year. Under such an arrangement all our relations should prosper better: with the investigators, with the students, and with institutions. The expense involved would probably be a diminishing amount owing to improvement in laboratory conditions generally.

As soon as plans are definitely under way for a permanent building, such an officer would be necessary to supervise the details decided on by the committee on the building, and to make investigations on behalf of the committee; and later when the laboratory was erected to receive investigators at other seasons of the year besides the summer. He should be furnished with assistance adequate to leave him sufficient time for research.

There are appended as parts of this report (1) a list of the staff, (2) lists of investigators and students in attendance, (3) a comparative tabular view of attendance, (4) the names of subscribing institutions, (5) the evening lectures, (6) a list of members of the corporation.

1. THE STAFF, 1910

F. R. LILLIE, DIRECTOR,

Professor of Embryology, University of Chicago.

GILMAN A. DREW, ASSISTANT DIRECTOR,

Professor of Biology, University of Maine.

ZOÖLOGY

I. INVESTIGATION

Zoölogy and Embryology

- E. G. CONKLIN.....Professor of Zoölogy, Princeton University
(Absent in 1910.)
- GILMAN A. DREW.....Professor of Biology, University of Maine.
- GEORGE LEFEVREProfessor of Zoölogy, University of Mis-
souri. (Absent in 1910.)
- FRANK R. LILLIE.....Professor of Embryology, University of
Chicago.
- THOS. H. MONTGOMERY, JR. Professor of Zoölogy, University of Penn-
sylvania.
- T. H. MORGAN.....Professor of Experimental Zoölogy, Colum-
bia University.
- E. B. WILSON.....Professor of Zoölogy, Columbia University.

II. INSTRUCTION

- WINTERTON C. CURTIS...Professor of Zoölogy, University of Mis-
souri.
- PAUL M. REA.....Professor of Biology, College of Charleston,
and Director of the Charleston Museum.
- EDWARD E. WILDMAN....Central High School, Philadelphia.
- JOHN W. SCOTT.....Westport High School, Kansas City.
- G. S. DODDS.....Fellow in Zoölogy, University of Pennsyl-
vania.
- H. J. SPENCER.....Assistant in Zoölogy, Columbia University.

EMBRYOLOGY**I. INVESTIGATION. (See Zoölogy)****II. INSTRUCTION**

GILMAN A. DREW.....Professor of Biology, University of Maine.
 LORANDE L. WOODRUFF...Assistant Professor of Biology, Yale University.

WILLIAM E. KELLCOTT..Professor of Biology, Goucher College.

ROBERT A. BUDINGTON...Associate Professor of Zoölogy, Oberlin College.

PHYSIOLOGY**I. INVESTIGATION**

ALBERT P. MATHEWS....Professor of Physiological Chemistry, University of Chicago.

E. P. LYON.....Professor of Physiology, University of St. Louis.

R. S. LILLIE.....Instructor in Comparative Physiology, University of Pennsylvania.

II. INSTRUCTION

H. H. NEWMAN.....Professor of Zoölogy, University of Texas.

FRANK P. KNOWLTON....Professor of Physiology, Syracuse University.

F. H. PIKE.....Instructor in Physiology, University of Chicago.

PHILOSOPHICAL ASPECTS OF BIOLOGY AND ALLIED SCIENCES**LECTURES**

EDWARD G. SPAULDING...Assistant Professor of Philosophy, Princeton University.

BOTANY

GEORGE T. MOORE.....Professor of Plant Physiology and Applied Botany, Washington University.

GEORGE R. LYMAN.....Assistant Professor of Botany, Dartmouth College.

- B. M. DUGGAR.....Professor of Plant Physiology, Cornell University.
I. F. LEWIS.....Professor of Biology, Randolph-Macon College.
LEWIS KNUDSONInstructor in Plant Physiology, Cornell University.

LIBRARY

- H. McE. KNOWER.....University of Cincinnati, Librarian.

CHEMICAL SUPPLIES

- OLIVER S. STRONG.....College of Physicians and Surgeons,
Chemist.
-
- G. M. GRAY.....Curator of Supply Department.
THOMAS M. DOUTHART..Collector in Zoölogy.
ARTHUR W. TAYLOR.....Collector in Botany, Salem High School,
Salem, Mass.
JOHN VEEDERCockswain.

2. INVESTIGATORS

1910

OCCUPYING ROOMS

I. ZOÖLOGY

- ADDISON, W. H. F., University of Pennsylvania.
BECKWITH, CORA J., Instructor in Biology, Vassar College.
BROWNE, ETHEL N., Instructor, Bennett School, Millbrook, New York.
BUDINGTON, ROBERT A., Associate Professor of Zoölogy, Oberlin College.
CARY, L. R., Princeton University, Princeton, N. J.
CLARK, ELIOT R., Associate in Anatomy, Johns Hopkins University.
CURTIS, W. C., Professor of Zoölogy, University of Missouri.
DODDS, GIDEON S., Professor of Biology, St. Louis University Medical School, St. Louis, Mo.
DREW, GILMAN A., Professor of Biology, University of Maine.
HARRISON, ROSS G., Bronson Professor of Comparative Anatomy, Yale University.
HARVEY, E. NEWTON, Columbia University, New York City.
JARVIS, MAY M., Tutor in Zoölogy, University of Texas.
KELLCOTT, WILLIAM E., Professor of Biology, Goucher College.
KNOWER, HENRY McE., Professor of Anatomy, University of Cincinnati.
LILLIE, FRANK R., Professor of Embryology, University of Chicago.
LOEB, LEO, Assistant Professor of Experimental Pathology, University of Pennsylvania.
McINDOO, NORMAN E., Fellow in Biology, University of Pennsylvania.
MONTGOMERY, T. H. JR., Professor of Zoölogy, University of Pennsylvania.
MORGAN, T. H., Professor of Experimental Zoölogy, Columbia University.
MURBACH, LOUIS, Central High School, Detroit, Michigan.
PATTERSON, J. THOMAS, Instructor in Zoölogy, University of Texas.
QUACKENBUSH, L. S., Columbia University.
REA, PAUL M., Professor of Biology, College of Charleston.
SCOTT, JOHN W., Westport High School, Kansas City, Mo.
SPENCER, HENRY J., Assistant in Zoölogy, Columbia University.
SPAULDING, EDWARD G., Assistant Professor of Philosophy, Princeton University.
STRONG, O. S., Instructor in Anatomy, College of Physicians and Surgeons, New York City.
WATKINSON, GRACE B., Columbia University.
WERBER, ERNEST I., Assistant in Anatomy, Johns Hopkins University.
WELLS, H. G., Associate Professor of Pathology, University of Chicago.
WILDMAN, EDWARD E., Central High School, Philadelphia, Pa.

WILSON, E. B., Professor of Zoölogy, Columbia University.

WOODRUFF, L. L., Assistant Professor of Biology, Yale University.

2. PHYSIOLOGY

DONALDSON, H. H., Professor of Neurology, Wistar Institute.

HIRSCHFELDER, ARTHUR D., Associate in Medicine, Johns Hopkins Medical School.

KNOWLTON, FRANK P., Professor of Physiology, Syracuse University, College of Medicine.

KING, W. O. REDMAN, Rockefeller Institute for Medical Research, New York City.

LOEB, JACQUES, Rockefeller Institute for Medical Research, New York City.

LILLIE, R. S., Instructor in Physiological Zoölogy, University of Pennsylvania.

MATHEWS, A. P., Professor of Physiological Chemistry, University of Chicago.

NEWMAN, H. H., Professor of Zoölogy, University of Texas.

PIKE, FRANK H., Instructor in Physiology, University of Chicago.

ROGERS, CHARLES G., Associate Professor of Physiology, Syracuse University.

WASTENEYS, HARDOLPH, Rockefeller Institute for Medical Research, New York City.

3. BOTANY

BESSEY, ERNEST A., Professor of Botany, Michigan Agricultural College.

DUGGAR, BENJAMIN M., Professor of Plant Physiology, Cornell University.

KNUDSON, LEWIS, Instructor in Plant Physiology, Cornell University.

LEWIS, IVEY FOREMAN, Professor of Biology, Randolph-Macon College.

LYMAN, GEORGE R., Assistant Professor of Botany, Dartmouth College.

MOORE, GEORGE T., Professor of Plant Physiology and Applied Botany, Washington University, St. Louis, Mo.

THOMAS, MASON B., Professor of Botany, Wabash College.

OSTERHOUT, W. J. V., Assistant Professor of Botany, Harvard University.

SMITH, ERWIN F., Pathologist in charge Laboratory of Plant Pathology, U. S. Department of Agriculture, Washington, D. C.

OCCUPYING TABLES

1. ZOÖLOGY

ALLYN, HARRIET, University of Chicago.

DAVIS, SARAH ELLEN, Student, Columbia University.

LINTON, ELEANOR A., Washington, Pa.

KELLEY, FRANK, J., University of Pennsylvania.

WILSON, HERRICK E., Assistant in Geology, Oberlin College.

SPOONER, GEORGIANA B., Palo Alto, Cal.

2. PHYSIOLOGY

DONALDSON, JOHN CALVERT, 3310 Race Street, Philadelphia, Pa.

TASHIRO, SHIRO, Fellow, University of Chicago.

3. BOTANY

TAYLOR, ARTHUR W., Warren, Mass.

STUDENTS

1910

INVERTEBRATE ZOÖLOGY

- BAKER, RITA G., 72 Huntington Avenue, Boston, Mass.
BELL, MARY M., Oberlin College, Oberlin, Ohio.
BODWELL, HELEN E., 137 Main Street, Andover, Mass.
CASHMAN, MARIE E., Syracuse University, Syracuse, New York.
COAR, HERBERT G., Dartmouth College, Hanover, N. H.
EDDOWES, FLORENCE E., Goucher College, Baltimore, Md.
ESTABROOK, A. H., Johns Hopkins University.
FENNER, HATTIE, University of Kansas, Lawrence, Kansas.
FIELD, LEANOR A., Mount Holyoke College, South Hadley, Mass.
GAVIN, HELEN, 28 West 97th Street, New York City.
KRANTZ, HAZEL I., Syracuse University, Syracuse, N. Y.
LEE, HORACE N., University of Maine, Orono, Maine.
McLAINE, LEONARD S., Massachusetts Agricultural College.
MARTIN, BERTHA E., Mount Holyoke College, South Hadley, Mass.
MARTIN, SUSIE E., Mount Holyoke College, South Hadley, Mass.
MASE, YAE KEMESAKI, Aichiken, Japan.
MOOK, CHARLES C., Columbia University, New York City.
MOON, EVANGELINE A., 436 Manhattan Avenue, New York City.
MORRISS, MAY J., 485 Central Park West, New York City.
OSGOOD, MARIAN S., Mount Holyoke College, South Hadley, Mass.
PAIGE, BERYL H., Mount Holyoke College.
PATTEN, HAZEL, Goucher College, Baltimore, Md.
PEARSON, LEONARD S., Academy of Natural Sciences, Philadelphia.
SEVIN, GERTRUDE K., Syracuse University.
SINK, EMORY W., University of Michigan, Ann Arbor, Mich.
TOPP, EMILY, 428 West 20th Street, New York City.
WILKINSON, GEORGE N., Bucknell University, Williamsport, Pa.
WILLIAMS, ANNIE E., Cochituate, Mass.
WISWELL, AMY P., East Machias, Maine.
WRIGHT, COILA B., Sheridan, New York.
ZABRISKIE, HELEN M., Vassar College, Poughkeepsie, N. Y.

EMBRYOLOGY

- ABBOTT, MARGARET B., 413 West Front Street, Plainfield, N. J.
APPLETON, JOSEPH L., State College, Pa.
ENNIS, AGNES A., Barnard College, Columbia University.
JUST, ERNEST E., Howard University, Washington, D. C.
KUNTZ, ALBERT, State University of Iowa.

- LEAVITT, GEORGE C., University of Maine, Orono, Maine.
MELLEN, IDA M., 530 Carleton Avenue, Brooklyn, New York.
PRENTISS, HENRIETTA, Normal College, New York City.
REDELINGS, LESLIE R., Northwestern University, Evanston, Ill.
SMITH, ISABEL S., Illinois College, Jacksonville, Ill.
ULLMAN, HENRY J., Rush Medical College, Chicago, Ill.

PHYSIOLOGY

- DAVIS, NATHAN SMITH III, 8 E. Huron Street, Chicago, Illinois.
MARKS, HENRY S., University of Rochester, Rochester, N. Y.
STARK, MARY B., St. Olaf College.
STEPHENSON, J. C., University of Chicago, Chicago, Ill.
WHITENTON, ROBERT O., University of Chicago, Chicago, Ill.

BOTANY

1. Plant Structures and Responses

- CHANDLER, JEAN FORREST, 4651 North Lincoln Street, Chicago, Ill.
CLEMENT, FRANK H. P., Tilton, N. H.
WELLS, COLLIN, Dartmouth College, Hanover, N. H.
JENNISON, HARRY M., Massachusetts Agricultural College.

2. Morphology and Taxonomy of the Algæ

- BRUGGER, HELEN F., Mount Holyoke College, South Hadley, Mass.
COLLEY, REGINALD H., Dartmouth College, Hanover, N. H.
CURTIS, OTIS F., Oberlin College, Oberlin, Ohio.
DAWSON, AVA B., 97 Mountfort Street, Boston, Mass.
HILL, ALBERT F., Dartmouth College, Hanover, N. H.
HOBBS, ETHELYN, Wellesley College, Wellesley, Mass.
IRWIN, JAMES M., Dartmouth College, Hanover, N. H.
LEIGHTON, HELEN, 68 Park Avenue, Canandaigua, New York.
ROBERTS, EDITH A., Mount Holyoke College, South Hadley, Mass.
RUTHERFORD, ELIZABETH E., 624 Fullerton Parkway, Chicago, Ill.
SPARGO, MILDRED W., 5050 Maple Avenue, St. Louis, Mo.
WALLBURG, AMY B., 54 Dale Street, Roxbury, Mass.
WILLISTON, RUTH, 297 Crown Street, New Haven, Conn.

3. TABULAR VIEW OF ATTENDANCE

| | 1907 | 1908 | 1909 | 1910 |
|---|------|------|------|------|
| INVESTIGATORS—Total | 60 | 52 | 66 | 62 |
| Occupying Rooms | | | | |
| Zoölogy | 32 | 32 | 39 | 33 |
| Physiology | 8 | 6 | 7 | 9 |
| Botany | 10 | 8 | 4 | 9 |
| Occupying Tables | | | | |
| Zoölogy | 9 | 6 | 14 | 5 |
| Physiology | 1 | | 2 | 2 |
| Botany | | | | 1 |
| STUDENTS—Total | 47 | 48 | 63 | 64 |
| Zoölogy | 34 | 19 | 36 | 31 |
| Embryology | | 15 | 12 | 10 |
| Physiology | 4 | 3 | 9 | 5 |
| Botany | 9 | 11 | 6 | 17 |
| UNIVERSITIES AND COLLEGES REPRESENTED.... | 47 | 51 | 47 | 49 |
| By Investigators | 26 | 25 | 27 | 26 |
| By Students | 21 | 26 | 20 | 24 |

4. SUBSCRIBING INSTITUTIONS, 1910

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.
COLUMBIA UNIVERSITY.
DARTMOUTH COLLEGE.
GOUCHER COLLEGE.
LUCRETIA CROCKER SCHOLARSHIP, BOSTON PUBLIC SCHOOLS.
MASSACHUSETTS AGRICULTURAL COLLEGE.
MOUNT HOLYOKE COLLEGE.
NORTHWESTERN UNIVERSITY.
OBERLIN COLLEGE.
PRINCETON UNIVERSITY.
ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.
SMITH COLLEGE.
SYRACUSE UNIVERSITY.
UNIVERSITY OF CHICAGO.
UNIVERSITY OF ILLINOIS.
UNIVERSITY OF KANSAS WOMAN'S TABLE SUPPORTED BY MRS. ROBIN-
SON.
UNIVERSITY OF MICHIGAN.
UNIVERSITY OF PENNSYLVANIA.
UNIVERSITY OF ROCHESTER.
VASSAR COLLEGE.
WASHINGTON UNIVERSITY ALUMNI ASSOCIATION.
WISTAR INSTITUTE OF ANATOMY AND BIOLOGY.
WELLESLEY COLLEGE.
YALE UNIVERSITY.

5. EVENING LECTURES, 1910

- JACQUES LOEB "How Does the Spermatozoön Cause
the Development of the Egg?"... July 1.
- C. BOWYER VAUX..... "How to Prepare a Paper for Pub-
lication" July 5.
- JOHN B. SMITH..... "Mosquitoes and Mosquito Cam-
paigns" July 8.
- H. H. DONALDSON.... "The Percentage of Water in the
Central Nervous System of Verte-
brates" July 12.
- W. J. V. OSTERHOUT.. "Some Aspects of the Action of Min-
eral Salts upon Plants"..... July 15.
- E. B. WILSON..... "Heredity and the Chromosomes".. July 19.
- B. M. DUGGAR..... "The Relation of Plants to Toxic
Agents, with Special Reference to
the Modification of Toxicity by
Chemical and Physical Agents".. July 26.
- R. M. YERKES..... "The Relation of Psychology to Biol-
ogy" July 29.
- J. T. PATTERSON..... "The Questions of Specific Polyem-
bryony and the Determination of
Sex in the Armadillo"..... Aug. 4.
- RALPH B. PERRY..... "When is a Thing Explained for the
Purpose of Science"..... Aug 5.
- RAYMOND PEARL "The Inheritance of Fecundity in the
Domestic Fowl" Aug. 9.

6. MEMBERS OF THE CORPORATION OF THE MARINE BIOLOGICAL LABORATORY

I. LIFE MEMBERS

- ALLIS, MR. EDWARD PHELPS, JR., Palais Carnoles, Menton, France.
- ANDREWS, MRS. GWENDOLEN FOULKE, 821 St. Paul St., Baltimore, Md.
- BILLINGS, MR. R. C., 66 Franklin Street, Boston, Mass.
- CAREY, MR. ARTHUR ASTOR, Fayerweather Street, Boston, Mass.
- CLARKE, PROF. S. F., Williams College, Williamstown, Mass.
- CONKLIN, DR. E. G., Princeton University, Princeton, New Jersey.
- CRANE, MR. C. R., 2559 Michigan Boulevard, Chicago, Ill.
- DAVIS, MAJOR HENRY M., Syracuse, New York.
- ENDICOTT, WILLIAM, JR., 31 Beacon St., Boston, Mass.
- EVANS, MRS. GLENDOWER, 12 Otis Place, Boston, Mass.
- FARLOW, PROF. W. G., Harvard University, Cambridge, Mass.
- FAY, MISS S. B., 88 Mt. Vernon Street, Boston, Mass.
- FOLSOM, MISS AMY, 88 Marlborough St., Boston, Mass.
- FOOT, MISS KATHARINE, 80 Madison Avenue, New York City.
- GARDINER, MISS EUGENIA, 15 West Cedar Street, Boston, Mass.
- HAMMOND, MR. G. W., Hotel Hamilton, Boston, Mass.
- HANNAMAN, MR. CHARLES E., 103 First Street, Troy, New York.
- HARRISON, PROVOST C. C., University of Pennsylvania, Philadelphia, Pa.
- JACKSON, MISS M. C., 88 Marlborough Street, Boston, Mass.
- JACKSON, MR. CHARLES C., 24 Congress Street, Boston, Mass.
- KENNEDY, MR. GEORGE G., 284 Warren Street, Roxbury, Mass.
- KIDDER, MR. C. G., 27 William Street, New York City.
- KIDDER, MR. NATHANIEL T., Milton, Mass.
- KING, MR. CHARLES A.

- LEE, MRS. FREDERIC S., 279 Madison Avenue, New York City.
- LOWELL, MR. A. LAWRENCE, 171 Marlborough Street, Boston, Mass.
- MASON, MISS E. F., 1 Walnut Street, Boston, Mass.
- MASON, MISS IDA M., 1 Walnut Street, Boston, Mass.
- MEANS, MR. JAMES HOWARD, 196 Beacon Street, Boston, Mass.
- MERRIMAN, MRS. DANIEL, Worcester, Mass.
- MINNS, MISS SUSAN, 14 Louisburg Square, Boston, Mass.
- MINNS, MR. THOMAS, 14 Louisburg Square, Boston, Mass.
- MINOT, DR. CHARLES S., Harvard Medical School, Boston, Mass.
- MIXTER, MISS M. C., 241 Marlborough Street, Boston, Mass.
- MORGAN, MR. J. PIERPONT, JR., Wall and Broad Streets, New York City.
- MORGAN, PROF. T. H., Columbia University, New York City.
- MORGAN, MRS. T. H., New York City.
- NORCROSS, MISS LAURA, 9 Commonwealth Avenue, Boston, Mass.
- NOYES, MISS EVA J., 28 South Willow Street, Montclair, N. J.
- NUNN, MR. LUCIAN L., Telluride, Colo.
- OSBORN, PROF. HENRY F., American Museum of Natural History, New York City.
- PELL, MR. ALFRED, Highland Falls, Orange County, N. J.
- PHILLIPS, DR. JOHN C., 299 Berkley Street, Boston, Mass.
- PHILLIPS, MRS. JOHN C., 299 Berkley Street, Boston, Mass.
- PORTER, DR. H. C., University of Pennsylvania, Philadelphia, Pa.
- PULSIFER, MR. W. H., Newton Center, Mass.
- ROGERS, MISS A. P., 5 Joy Street, Boston, Mass.
- ROGERS, MRS. WILLIAM B., 117 Marlborough Street, Boston, Mass.
- SEARS, DR. HENRY F., 420 Beacon Street, Boston, Mass.
- SHEDD, MR. E. A.
- SMITH, MRS. C. C., 286 Marlborough Street, Boston, Mass.
- STROBELL, MISS E. C., 80 Madison Avenue, New York City.
- THORNDIKE, DR. EDWARD L., Teachers' College, Columbia University, New York City.
- TRELEASE, PROF. WILLIAM, Missouri Botanical Gardens, St. Louis, Mo.
- WARE, MISS MARY L., 41 Brimmer Street, Boston, Mass.
- WARREN, MRS. S. D., 67 Mt. Vernon Street, Boston, Mass.

WHITNEY, MR. HENRY M., Brookline, Mass.
WILLCOX, MISS MARY A., Wellesley College, Wellesley, Mass.
WILMATH, MRS. H. D., Elliott Street, Jamaica Plain, Mass.
WILLIAMS, MRS. ANNA P., 505 Beacon Street, Boston, Mass.
WILSON, DR. E. B., Columbia University, New York City.
WILSON PROF. W. P., Philadelphia Museum, Philadelphia, Pa.

II. MEMBERS, AUGUST 9, 1910

ABBOTT, MARGARET B., 413 W. Front St., Plainfield, N. J.
ADAMS, C. F., University of Arkansas, Fayetteville, Arkansas.
ADDISON, W. H. F., University of Pennsylvania, Philadelphia,
Pa.
ALSBURG, CARL S., U. S. Dept. Agriculture, Washington, D. C.
BAKER, E. H., 5444 Catherine St., Philadelphia, Pa.
BARDEEN, C. R., University of Wisconsin, Madison, Wis.
BECKWITH, CORA J., Vassar College, Poughkeepsie, New York.
BIGELOW, MAURICE A., Teachers College, New York City.
BIGELOW, ROBERT P., Massachusetts Institute of Technology,
Boston, Mass.
BLATCHFORD, E. W., 1111 LaSalle Ave., Chicago, Ill.
BROOKOVER, CHARLES, Buchtel College, Akron, Ohio.
BROWNE, ETHEL N., Bennett School, Millbrook, New York.
BUCKINGHAM, EDITH N., 342 Marlborough St., Boston, Mass.
BUDINGTON, ROBERT A., Oberlin College, Oberlin, Ohio.
BUMPUS, H. C., University of Wisconsin, Madison, Wis.
BYRNES, ESTHER F., 193 Jefferson Ave., Brooklyn, New York.
CALKINS, GARY N., Columbia University, New York City.
CALVERT, PHILIP P., University of Pennsylvania, Philadelphia,
Pa.
CARLSON, A. J., University of Chicago, Chicago, Ill.
CARY, L. R., Princeton University, Princeton, N. J.
CATTELL, J. McKEEN, Garrison-on-Hudson, New York.
CHESTER, WEBSTER, Colby College, Waterville, Maine.
CHIDESTER, FLOYD E., Clark University, Worcester, Mass.
CHILD, C. M., University of Chicago, Chicago, Ill.
CLAPP, CORNELIA M., Mount Holyoke College, South Hadley,
Mass.

- CLARK, ELIOT R., Johns Hopkins University, Baltimore, Md.
COE, W. R., Yale University, New Haven, Conn.
COLTON, H. S., 3409 Powellton Ave., Philadelphia, Pa.
COMSTOCK, J. H., Cornell University, Ithaca, New York.
COOLIDGE, CHARLES A., Ames Building, Boston, Mass.
CURTIS, W. C., University of Missouri, Columbia, Mo.
DIMON, ABIGAIL C., 367 Genesee St., Utica, N. Y.
DODDS, G. S., St. Louis University Medical School, St. Louis, Mo.
DONALDSON, H. H., Wistar Institute of Anatomy and Biology,
Philadelphia.
DORRANCE, ANN, Dorranceton, Pa.
DORRANCE, FRANCES, Dorranceton, Pa.
DREW, GILMAN A., University of Maine, Orono, Maine.
EATON, E. H., Hobart College, Geneva, N. Y.
EIGENMANN, CARL H., University of Indiana, Bloomington, Ind.
FIELD, IRVING A., Western Maryland College, Westminster, Md.
FERGUSON, J. S., Cornell University Medical School, New York
City.
FREEMAN, MISS HARRIET E., 37 Union Park St., Boston, Mass.
GAGE, S. H., Cornell University, Ithaca, New York.
GIES, WILLIAM J., Director, Dept. Biological Chemistry, Colum-
bia University, N. Y.
GLASER, O. C., University of Michigan, Ann Arbor, Mich.
GOLDFARB, A. J., Columbia University, New York City.
GREENMAN, M. J., Wistar Institute of Anatomy and Biology,
Philadelphia.
GREGORY, LOUISE H., Barnard College, New York City.
HALL, ROBERT W., 152 South Linden St., Bethlehem, Pa.
HARGITT, C. W., Syracuse University, Syracuse, New York.
HARRISON, A. C., Woods Hole, Mass.
HARRISON, ROSS G., Yale University, New Haven, Conn.
HARVEY, B. C. H., University of Chicago, Chicago, Ill.
HARVEY, E. N., Department of Zoölogy, Columbia University.
HAYES, S. P., Mount Holyoke College, South Hadley, Mass.
HEATH, HAROLD, Stanford University, California.
HOAR, D. BLAKELY, 161 Devonshire St., Boston, Mass.
HOLMES, S. J., 133 East Gorham St., Madison, Wisconsin.
ISELEY, F. B., Oklahoma Academy of Science, Tonkawa, Okla.

- JACKSON, C. M., University of Missouri, Columbia, Mo.
JAYNE, HORACE, Wistar Institute of Anatomy and Biology, Philadelphia.
JENNINGS, H. S., Johns Hopkins University, Baltimore, Md.
JONES, LYND, Oberlin College, Oberlin, Ohio.
JORDAN, H. E., University of Virginia, Charlottesville, Va.
KELLEY, F. J., Department of Zoölogy, University of Pennsylvania.
KELLCOTT, W. E., Goucher College, Baltimore, Md.
KENNEDY, HARRIS, Readville, Mass.
KING, HELEN D., Wistar Institute of Anatomy and Biology, Philadelphia.
KINGSBURY, B. F., Cornell University Medical School, New York City.
KINGSLEY, J. S., Tufts College, Mass.
KIRKHAM, W. B., Yale University, New Haven, Conn.
KNOWER, H. McE., University of Cincinnati, Cincinnati, Ohio.
KNOWLTON, F. P., Syracuse University, Syracuse, New York.
KRAEMER, HENRY, 424 South 44th St., Philadelphia, Pa.
KRIBS, HERBERT, University of Pennsylvania, Philadelphia, Pa.
LEWIS, I. F., Randolph Macon College, Ashland, Va.
LEE, F. S., 437 West 59th St., New York City.
LEFEVRE, GEORGE, University of Missouri, Columbia, Mo.
LEWIS, WARREN H., Johns Hopkins University, Baltimore, Md.
LIBBEY, WILLIAM, Princeton University, Princeton, N. J.
LILLIE, FRANK R., University of Chicago, Chicago, Ill.
LINTON, EDWIN, Washington and Jefferson College, Washington, Pennsylvania.
LOEB, JACQUES, Rockefeller Institute for Medical Research, New York City.
LOEB, LEO, St. Louis University Medical School, St. Louis, Mo.
LUSCOMBE, WALTER O., Woods Hole, Mass.
LYMAN, GEORGE R., Dartmouth College, Hanover, N. H.
LYON, E. P., St. Louis University Medical School, St. Louis, Mo.
MCCLENDON, J. F., Cornell University Medical School, New York City.
MCGILL, CAROLINE, University of Missouri, Columbia, Mo.
MCGREGOR, J. H., Columbia University, New York City.

- McINDOO, N. E., Department of Zoölogy, University of Pennsylvania.
- MACKENZIE, MARY D., Western College, Oxford, Ohio.
- McKIBBEN, PAUL S., University of Chicago, Chicago, Ill.
- McMURRICH, J. P., University of Toronto, Toronto, Canada.
- MALL, F. P., Johns Hopkins University, Baltimore, Md.
- MAST, S. O., Johns Hopkins University, Baltimore, Md.
- MATHEWS, ALBERT P., University of Chicago, Chicago, Ill.
- MAYER, A. G., Maplewood, N. J.
- MEIGS, E. B., Harvard Medical School, Boston, Mass.
- MELTZER, S. J., 13 West 121st St., New York City.
- METCALF, M. M., Oberlin College, Oberlin, Ohio.
- MINOR, MARIE L., Wadleigh High School, 114th St. and 7th Ave., New York City.
- MOENKHAUS, W. J., University of Indiana, Bloomington, Ind.
- MONTGOMERY, T. H., JR., University of Pennsylvania.
- MOORE, G. T., Missouri Botanical Gardens, St. Louis, Mo.
- MOORE, J. PERCY, University of Pennsylvania.
- MORGAN, H. A., Agricultural Experiment Station, Knoxville, Tenn.
- MORRILL, A. D., Hamilton College, Clinton, N. Y.
- MORRILL, CHARLES V., Syracuse University, College of Medicine, New York.
- MURBACH, LOUIS, 950 Cass Avenue, Detroit, Mich.
- NACHTRIEB, H. F., University of Minnesota, Minneapolis, Minn.
- NEAL, H. V., Knox College, Galesburg, Illinois.
- NEWMAN, H. H., University of Texas, Austin, Texas.
- NICHOLS, MISS M. L., 3207 Summer St., Philadelphia, Pa.
- OGLEVEE, C. S., Lincoln, Ill.
- ORTMANN, A. E., Carnegie Museum, Pittsburg, Pa.
- OSBURN, RAYMOND C., Barnard College, New York City.
- PACKARD, CHARLES, Williams College, Williamstown, Mass.
- PACKARD, W. H., Bradley Polytechnic Institute, Peoria, Ill.
- PARKER, G. H., 16 Berkeley St., Cambridge, Mass.
- PATTEN, MISS J. B., Simmons College, Boston.
- PATTEN, WILLIAM, Dartmouth College, Hanover, N. H.
- PATTERSON, J. T., University of Texas, Austin, Texas.
- PAYNE, FERNANDUS, University of Indiana, Bloomington, Ind.

- PEARSE, A. S., University of Michigan, Ann Arbor, Mich.
PIKE, FRANK H., University of Chicago, Chicago, Ill.
PORTER, WILLIAM T., 688 Boylston St., Boston, Mass.
PRENTISS, HENRIETTA, Normal College, City of New York.
QUACKENBUSH, L. S., 27 West 73d St., New York City.
RANDOLPH, HARRIET, Bryn Mawr College, Pa.
RANKIN, WALTER M., Princeton University, Princeton, N. J.
REA, PAUL M., The Charleston Museum, Charleston, S. C.
REIGHARD, JACOB, University of Michigan, Ann Arbor, Mich.
RICE, EDWARD L., Ohio Wesleyan University, Delaware, Ohio.
ROGERS, CHARLES G., Syracuse University, Syracuse, N. Y.
ROMINE, A. P., 1801 "I" St., Bellingham, Wash.
SCOTT, G. G., College of the City of New York, New York City.
SCOTT, JOHN G., Westport High School, Kansas City, Mo.
SCOTT, W. B., Princeton University, Princeton, N. J.
SHOREY, MARIAN L., Milwaukee-Downer College, Milwaukee, Wisconsin.
SMITH, BERTRAM G., University of Wisconsin, Madison, Wis.
SMITH, ERWIN F., U. S. Dept. Agriculture, Washington, D. C.
SOLLMAN, TORALD, Western Reserve University, Cleveland, Ohio.
SPENCER, HENRY J., Columbia University, New York City.
SPOONER, GEORGINA B., Columbia University, New York City.
STOCKARD, CHARLES R., Cornell University Medical School, New York City.
STREETER, GEORGE L., University of Michigan, Ann Arbor, Mich.
STRONG, O. S., College of Physicians and Surgeons, New York City.
STRONG, R. M., University of Chicago, Chicago, Ill.
SUMNER, F. B., Woods Hole, Mass.
TAYLOR, KATHERINE A., Cascade, Washington Co., Maryland.
TENNENT, D. H., Bryn Mawr College, Pa.
TERRY, O. P., Purdue University, Lafayette, Ind.
THOMPSON, CAROLINE B., 195 Weston Road, Wellesley, Mass.
THOMAS, MASON B., Wabash College, Crawfordsville, Ind.
TINKHAM, FLORENCE L., 56 Temple St., Springfield, Mass.
TOMPKINS, ELIZABETH M., High School, White Plains, New York.
TOWER, WILLIAM L., University of Chicago, Chicago, Ill.

- TREADWELL, A. L., Vassar College, Poughkeepsie, New York.
- USHER, SUSANNAH, 1007 W. Illinois St., Urbana, Ill.
- WAITE, FREDERICK C., Western Reserve Medical School, Cleveland, Ohio.
- WATSON, FRANK E., 29 Maywood St., Worcester, Mass.
- WERBER, E. I., Anatomical Laboratory, Johns Hopkins University.
- WHEELER, ISABEL, No. 11, The Loiston, Toledo, Ohio.
- WIEMAN, H. L., University of Cincinnati, Cincinnati, Ohio.
- WILCOX, ALICE W., 165 Prospect St., Providence, R. I.
- WILDMAN, EDWARD E., 4331 Osage Ave., Philadelphia, Pa.
- WILLIAMS, ANNA W., 549 Riverside Drive, New York City.
- WILSON, H. V., University of North Carolina, Chapel Hill, N. C.
- WOODRUFF, L. L., Yale University, New Haven, Conn.
- WOLFE, JAMES J., Trinity College, Durham, N. C.
- WRIGHT, R. RAMSAY, University of Toronto, Toronto, Canada.
- YERKES, ROBERT M., Harvard University, Cambridge, Mass.